

REMARKS

We have amended independent claims 1, 18 and 19 to include features recited in dependent claim 3 (now canceled) as well as other new features. Support for these amendments can be found at page 4, lines 8 to 17 and page 9, lines 1 to 3. No new matter has been added.

Prior Art Rejections

The Examiner has rejected claims 1-11, 14-20 and 22 as being unpatentable over Puglia (U.S. 6,087,972) in view of Cern (U.S. 6,452,482). The Examiner appears to acknowledge that Puglia does not disclose a signal distorter in the form of a field distorter, much less a field distorter adjacent to a first conductor. The Examiner however cites Cern as disclosing this feature and argues that a person of skill in the art would have found it obvious to use Cern's alternative inductive coupling to provide the benefit of allowing installation at any appropriate location without having to sever the conductor.

We submit however that neither Puglia nor Cern disclose a detector device comprising at least a field-distorter including a semiconductor device and a conductor, disposed adjacent to the semiconductor device, for carrying a first electro-magnetic signal; the semiconductor device being responsive to an input signal to shift the phase of the first electromagnetic signal to produce a phase shifted first electromagnetic signal; and a mixer to mix the phase shifted first electromagnetic signal with a second electromagnetic signal to produce thereby a combined signal having a characteristic determined by the input signal, indicative of the correct operation or otherwise of the detector device, wherein the characteristic of the combined signal corresponds to a change in a dc component of the combined signal; the change being responsive to the input signal, as recited in amended claim 1.

We further submit that neither Puglia nor Cern disclose a motion detection system comprising a detector device comprising at least a field-distorter comprising a semiconductor device and a conductor, disposed adjacent to the semiconductor device, responsive to an input signal, to shift the phase of a first electro-magnetic signal to produce a phase shifted first electro-magnetic signal; and a mixer to mix the phase shifted first electro-magnetic signal and with a

second electromagnetic signal to produce a combined signal having a characteristic determined by the input signal, indicative of the correct operation or otherwise of the detector device, wherein the characteristic of the combined signal corresponds to a change in a dc component of the combined signal; the change being responsive to the input signal, as recited in amended claim 18.

Finally, we submit that neither Puglia nor Cern disclose a method of operating a detector device comprising at least a field-distorter comprising a semiconductor device and a conductor disposed adjacent the semiconductor device, for carrying a first electro-magnetic signal the semiconductor device being responsive to an input signal to shift the phase of the first electro-magnetic signal to produce a phase shifted first electro-magnetic signal; and a mixer to mix the phase shifted first electro-magnetic signal and a second electro-magnetic signal to produce a combined signal having a characteristic determined by the input signal, indicative of the correct operation or otherwise of the detector device, wherein the characteristic of the combined signal corresponds to a change in a dc component of the combined signal; the change being responsive to the input signal; the method comprising applying a signal to the circuit element to vary the electrical or electromagnetic characteristics of the circuit element and thereby influence at least one characteristic of the first electro-magnetic signal; and producing an output signal indicative of the degree of influence exerted on the first electro-magnetic signal, as recited in amended claim 19.

Although there are structural similarities between the disclosure in Puglia and the previous and presently amended claim 1, Puglia and embodiments of the present invention are directed to solving entirely different technical problems. Puglia seeks a more reliable way of determining the velocity and, more particularly, the direction of motion of a body within a protected volume. In contrast, the inventions recited in amended claims 1, 18 and 19 seek to determine the correct operation or otherwise of the detector device with a view to detecting failure.

Cern is concerned, generally, with using power lines as a data distribution medium and, more particularly, with the technical problem of avoiding the need to install an expensive T1 line

and to couple it to the low voltage side of a power transformer. Therefore, *"in order to exploit the medium voltage distribution grid as a data backhaul channel, a device is required to bypass the distribution transformer"* as can be appreciated from, for example, column 1, lines 48 to 51. Furthermore, the inductive couplers used in embodiments of Cern are wholly unsuitable for use with Puglia's system as well as the inventions recited in amended claims 1, 18 and 19. A coupler within Cern is concerned with coupling data to a heavy electrical power carrying cable 1110, which is rated to carry *"200 amps RMS"* as can be appreciated from, for example, column 13, line 65.

We submit that the teaching of Cern is incompatible with the teaching of Puglia from the perspective of size, scale and suitability nor is the technology disclosed in Cern readily transferable to Puglia.

We submit therefore that independent claims 1, 18 and 19 are patentably distinct from both Puglia and Cern. We further submit that because 2-11, 14-17 and 22 depend from independent claim 1 and claim 20 depends from independent claim 19, these dependent claims are patentable for at least the same reasons that claims 1 and 19 are patentable.

The Examiner also rejected claims 12 and 13 as being unpatentable over Puglia in view of Cern and further in view of McMaster (U.S. 4,600,024). The Examiner acknowledges that neither Puglia nor Cern disclose that the characteristic of the combined signal is used to determine the correct operation of a detector device. The Examiner argues however that McMaster discloses a motion detector having a supervisory circuit to monitor malfunction of a component part of a detector and that a person of skill in the art would somehow use McMaster's malfunction supervisory feature with the combined teachings of Puglia and Cern to prevent false alarms and increase safety.

Referring to McMaster, since the advent of Gunn Oscillator usage in Dual Technology Motion Detectors (Passive Infra Red and Microwave), there has always been a concern over the reliability of Gunn Oscillator transceivers. For this reason, a number of intruder alarm manufacturers introduced techniques to monitor the operation of the Gunn Oscillator transceiver. In many cases these techniques had associated patent applications and grants. These are equally

applicable to FET based Oscillator transceivers. Therefore, patents citing supervisory monitoring of microwave motion detectors are nothing new and are well known to the applicant. McMaster is merely one such patent. However, the problem with the prior art supervisory systems is that they are not 100% reliable and can give false positives, i.e. register a failure when there in fact is nothing wrong. McMaster is a good example that explains why supervision is required and what can be done when a failure is found. However, McMaster, and many other supervisory systems, relies on the dc output from the receiver mixer diode being present to confirm operation by signal processing methods. It is clear, however, that McMaster cannot influence that dc offset while the transceiver is operating to produce a different dc offset. McMaster potentially falls down as, under certain circumstances (manufacturing tolerance, temperature, device tolerance), the dc output from an operating mixer, particularly balanced mixers, can be zero or close to zero. Such a supervisory technique would, therefore, give a false indication of failure. The significant advantage of embodiments of the inventions recited in applicants claims is that, regardless of the mixer's dc offset, it can be changed by phase shifting (influencing) the microwave signal on either the RF port or the LO port of the mixer. This has the very significant advantage that embodiments of the present inventions are considerably more reliable as compared to the prior art. Therefore, it is suggested that the claims are novelty and inventive over Puglia, Cern and McMaster taken jointly, in any combination, or severally.


We are filing using the EFS system. Please apply the \$60 fee for the Petition for Extension of Time fee and any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 13804-002001.

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Respectfully submitted,

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